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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,854	02/10/2004	Urs Bapst	YOR920030633US1	1076

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EXAMINER	
BLEVINS, JERRY M	

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/775,854	BAPST ET AL.	
	Examiner	Art Unit	
	Jerry Martin Blevins	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 19, 2006 has been entered.

Response to Arguments

Applicant's arguments filed Jun e19, 2006 have been fully considered but they are not persuasive.

With regards to applicant's argument that the applied prior art reference to Gallup et al., US Patent number 6,982,437 allegedly fails to disclose the use of one or more etch stop layers and one or more cavities having a defined positioning and depth in a circuit board, examiner respectfully points out that this argument is erroneous. Specifically, Gallop does teach the use of an etch stop layer (Figure 5A, element 516) and a cavity (540). Figure 5A of Gallop shows that the cavity has a defined positioning and depth with respect to the optical element (530) on the circuit board. With regards to applicants argument that one of ordinary skill in the art would not be motivated to combine Gallop with the teachings of applied prior art reference to Kuhmann et al., US

Patent number 6,832,013, because Gallop allegedly fails to suggest utilizing a cavity for aligning optical elements, examiner respectfully points out that this argument is also erroneous. Specifically, Gallop does teach the use of cavities in the alignment of optical elements (see column 5, line 44 - column 6, line 36).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 10, 11, and 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent to Kuhmann et al., number 6,832,013 in view of US Patent to Gallup et al., number 6,982,437.

Regarding claim 1, Kuhmann teaches a method of processing a circuit board (Figure 5, element 10) having one or more optical waveguides (18) associated therewith, the method comprising the steps of: providing one or more etch stop layer (14) in proximity to the one or more waveguides, at least one of the etch stop layers comprising one or more fiducials (19) therein; and from a surface of the circuit board, using the one or more etch stop layers to selectively remove material (column 7, lines 8-24). Kuhmann does not teach that provision of one or more cavities having a defined positioning and depth in the circuit board. Gallup teaches using one or more etch stop layers to selectively remove material to provide one or more cavities having a defined

positioning and depth in the circuit board (Figure 5A and column 6, lines 8-17), wherein said on or more cavities provide for an alignment of one or more optical elements (column 5, line 44 - column 6, line 36). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the one or more etch stop layers of Kuhmann to selectively remove material to provide one or more cavities having a defined positioning and depth in the circuit board, wherein said on or more cavities provide for an alignment of one or more optical elements, as taught by Gallup. The motivation would have been to improve passage of light through the optical waveguide.

Regarding claim 21, Kuhmann teaches a circuit board (Figure 5, element 10) having one or more optical waveguides (18) associated therewith, comprising one or more openings (column 7, lines 8-24) each with a positioning and depth defined using one or more etch stop layers (14) in proximity to the one or more waveguides, at least one of the etch stop layers comprising one or more fiducials (19) therein. Kuhmann does not teach that the openings are cavities, wherein said one or more cavities provide for an alignment of one or more optical elements. Gallup teaches using one or more etch stop layers to selectively remove material to provide one or more cavities having a defined positioning and depth in the circuit board (Figure 5A and column 6, lines 8-17), wherein said on or more cavities provide for an alignment of one or more optical elements (column 5, line 44 - column 6, line 36). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the one or more etch stop layers of Kuhmann to selectively remove material to provide one or more cavities having a defined positioning and depth in the circuit board, wherein said on or more cavities

provide for an alignment of one or more optical elements, as taught by Gallup. The motivation would have been to improve passage of light through the optical waveguide.

Regarding claims 2 and 22, Kuhmann in view of Gallup teaches the limitations of the base claims 1 and 21, respectively. Kuhmann also teaches that the one or more fiducials define a positioning in a plane of the circuit board (abstract).

Regarding claims 3 and 23, Kuhmann in view of Gallup teaches the limitations of the base claims 1 and 21, respectively. Kuhmann also teaches that the one or etch stop layers define a depth in the circuit board (column 7, lines 25-30).

Regarding claim 4, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann also teaches openings exposing at least a portion of the one or more waveguides (column 7, lines 31-35).

Regarding claim 5, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann also teaches that the one or more etch stop layers acts as a selective etch stop (column 7, lines 8-24).

Regarding claim 6, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann also teaches that the one or more etch stop layers acts as a complete etch stop (column 7, lines 25-30).

Regarding claim 10, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann also teaches the material removed comprises a substrate material (column 7, lines 31-35).

Regarding claim 11, Kuhmann in view of Gallup teaches the limitations of the base claim 10. Kuhmann also teaches that the substrate is organic material (column 14, lines 40-54).

Regarding claim 14, Kuhmann in view of Gallop teaches the limitations of the base claim 1. Kuhmann also teaches at least a portion of the material is selectively removed using reactive ion etching (column 7, lines 31-35).

Regarding claim 15, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann also teaches openings which serve as one or more reference points to align at least one optical component (Figure 19, element 25) with one or more waveguides (Figure 19, element 18).

Regarding claims 16 and 17, Kuhmann in view of Gallup teaches the limitations of the base claim 15. Kuhmann also teaches that the at least one optical component comprises one or more alignment pins (Figures 19, element 48) each having a shape that corresponds with openings, wherein the alignment pins are circular.

Regarding claim 18, Kuhmann in view of Gallup teaches the limitations of the base claim 15. Kuhmann also teaches that the at least one optical component is an opto-electronic module (column 15, lines 49-57).

Regarding claim 19, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann also teaches that openings serve as one or more reference points to align at least one receptacle for an optical component with one or more waveguides (column 15, lines 49-57).

Regarding claim 20, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann does not teach that the circuit board has two or more waveguides associated therewith. It would have been obvious to one of ordinary skill in the art at the time of the invention to include two or more waveguides in the circuit board since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art, St. Regis Paper Co. v. Bemis Co., 193 USPQ 8. The motivation would have been to improve the efficiency of the alignment.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhmann in view of Gallup as applied to claim 1 above, and further in view of US Patent to Chan et al., number 5,122,852.

Regarding claims 7 and 8, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann does not teach that one or more of the etch stop layers comprises a metal. Chan teaches etch stop layers comprising gold. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kuhmann with the gold etch stop layers of Chan. The motivation would have been to improve the precision of the etching.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhmann in view of Gallup as applied to claim 1 above, and further in view of US Pre Grant Publication to Burns, number 2001/0046346.

Regarding claim 9, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann does not teach that one or more of the etch stop layers comprises a reflective dielectric thin film. Burns teaches etch stop layers comprising a reflective dielectric thin film (page 7, paragraph 81). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kuhmann with the reflective dielectric thin film etch stop layers of Burns. The motivation would have been to improve the precision of the etching.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhmann in view of Gallup as applied to claim 1 above, and further in view of US Pre Grant Publication to Burdick, Jr. et al., number 2002/0075107.

Regarding claim 12, Kuhmann in view of Gallup teaches the limitations of the base claim 1. Kuhmann does not teach that the material is selectively removed user laser ablation techniques. Burdick teaches removing material using laser ablation techniques (page 3, paragraph 26). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kuhmann with the laser ablation techniques of Burdick. The motivation would have been to improve the accuracy of the removal.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhmann in view of Gallup and further in view of Burdick as applied to claim 13 above, and further in view of US Patent to Coyle, Jr. et al., number 5,101,090.

Regarding claim 13, Kuhmann in view of Gallup and further in view of Burdick teaches the limitations of the base claim 12. Kuhmann in view of Burdick does not teach that the laser ablation techniques comprise use of a carbon dioxide laser. Coyle teaches the use of a carbon dioxide laser for laser ablation techniques (column 5, lines 10-22). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kuhmann in view of Burdick with the use of the carbon dioxide laser of Coyle. The motivation would have been to improve the accuracy of the removal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMB

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